CLAIMS

What is claimed is:

1   1.   A method of correcting data; comprising;

2   (a)   decoding a received data block to form a reconstructed data block;

3   (b)   determining a column parity of each column of said reconstructed data block;

4   (c)   producing a list of most probable errors and an associated metric for relating to

5   each row of said reconstructed data block;

6   (d)   creating an error mask utilizing said list of most probable errors; and

7   (e)   performing an exact match function for each row of said reconstructed data block;

8   wherein a result of said exact match function and said associated metric are

9   compared to determine if a correction of a bit of said reconstructed data block is

10   made for each row.

1   2.   The method as claimed in claim 1, wherein decoding of said received

2   data block includes transfer of said received data block through a Viterbi detector.

1   3.   The method as claimed in claim 1, wherein said producing of said list of

2   most probable errors and said associated metric is accomplished by sending said

3   reconstructed data block through a set of matched filters.

1   4.   The method as claimed in claim 1, wherein determining of said column

2   parity of each column of said reconstructed data block creates a column parity check

3   syndrome.

1   5.   The method as claimed in claim 4, wherein said error mask defines a

2   vicinity of said column parity check syndrome for which said list of most probable errors

3   should be checked against.

1   6.   The method as claimed in claim 4, wherein calculating of said exact

2   match function comprises:

3   (a)   performing an exclusive OR operation with said list of most probable errors and

4   said column parity check syndrome to create a first result; and

5   (b)   performing an AND operation with said first result and said error mask to create a

6   second result, wherein said second result is a result of said exact match function.

1   7.   The method as claimed in claim 1, wherein a priority of correction is given

2   to a row in which said result of said exact match function is an exact match.

1   8.   A method of accurately correcting data; comprising;

2 (a)   decoding a received data block to form a reconstructed data block;

3 (b)   determining a column parity of each column of said reconstructed data block to

4   form a column parity check syndrome;

5 (c)   producing a list of most probable errors and an associated metric for relating to

6   each row of said reconstructed data block;

7 (d)   creating an error mask utilizing said list of most probable errors;

8 (e)   performing an exclusive OR operation with said list of most probable errors and

9   said column parity check syndrome to create a first result; and

10 (f)   performing an AND operation with said first result and said error mask to create a

11   second result, wherein said second result is a result of an exact match function,

12   said result of said exact match function and said associated metric being

13   compared to determine if a correction of a bit of said reconstructed data block is

14   made for each row.

1   9.   The method as claimed in claim 8, wherein decoding of said received

2 data block includes transfer of said received data block through a Viterbi detector.

1   10.   The method as claimed in claim 8, wherein said producing of said list of

2 most probable errors and said associated metric is accomplished by sending said

3 reconstructed data block through a set of matched filters.

1   11.   The method as claimed in claim 8, wherein said error mask defines a

2 vicinity of said column parity check syndrome for which said list of most probable errors

3 should be checked against.

1   12.   The method as claimed in claim 8, wherein a priority of correction is given

2   to a row in which said result of said exact match function is an exact match.

1   13.   A digital processing system, comprising:

2   (a)   means for decoding a received data block to form a reconstructed data block;

3   (b)   means for producing a list of most probable errors and an associated metric

4   relating to each row of said reconstructed data block; said producing means being

5   coupled to said decoding means;

6   (c)   means for determining a column parity of said reconstructed data block to form a

7   column parity check syndrome;

8   (d)   means for creating an error mask coupled to said producing means; and

9   (e)   means for performing an exact match function to produce a result; said means for

10   performing an exact match being coupled to said means for determining a column

11   parity and said means for producing a list of most probable errors and an

12   associated metric; and

13   (f)   means for correcting data of said reconstructed data block; wherein said correcting

14   means compares said result of said exact match function and said associated

15   metric to determine if a correction of a bit of a row of said reconstructed data

16   block is made.

1   14.   The digital signal processing system as claimed in claim 13, wherein said

2   decoding means includes a Viterbi detector.

1   15.   The digital signal processing system as claimed in claim 13, wherein said

2   producing means includes a set of matched filters which receives said reconstructed data

3   block.

1   16.   The digital signal processing system as claimed in claim 13, wherein said

2   error mask defines a vicinity of said column parity check syndrome for which said list of

3   most probable errors should be checked against.

1   17.   The digital signal processing system as claimed in claim 13, wherein said

2   exact match function includes an exclusive OR operation with said list of most probable

3   errors and said column parity check syndrome and an AND operation of a result of said

4   exclusive OR operation with said error mask.

1   18.   The digital signal processing system as claimed in claim 13, wherein a

2   priority of correction is given to a row in which said result of said exact match function is

3   an exact match.